

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)
2. (Canceled)
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Canceled)
8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Currently Amended) An imaging system for generating an image of an object, said imaging system comprising a base, a mechanical positioning means movably attached to said base, an x-ray source assembly comprising an x-ray source configured to emit x-ray signals and attached to said mechanical positioning means, and a detector assembly comprising a detector attached to said mechanical positioning means, said system configured to:

enable an operator to select a mode of operation from a plurality of modes of the imaging system, said plurality of modes including a computed tomography mode in which said mechanical positioning means rotates through an angle of 180 degrees plus a fan angle, said x-ray source emits x-rays and said detector assembly collects signals, and in which an image in said computed tomography mode is generated utilizing said collected signals;

alter the position of said detector assembly and said source assembly relative to said other assembly and the object based on the selected mode; and

generate an image of the object; object, and wherein to generate an image of the object, said system is configured to radiate x-ray signals from said x-ray source toward said detector assembly, wherein said detector assembly comprises a first detector panel and a second detector panel, and wherein to collect image data, said system is configured to angularly position said first detector panel relative to said second detector panel at least one of acutely or perpendicularly; and

said system further configured to enable the operator to select at least one additional mode of operator from the plurality of modes of the imaging system for imaging the object.
~~system and to combine images from the selected modes of operation to thereby improve image quality.~~

19. (Previously Presented) A system in accordance with Claim 18 wherein to enable the operator to select a mode, said system is configured enable the operator to select at least one of an x-ray fluoro mode and a tomosynthesis mode.

20. (Original) A system in accordance with Claim 18 wherein to alter the position of said detector assembly and said source assembly, said system is configured to rotate said positioning means relative to said base so that said detector assembly and said source assembly are rotated about the object.

21. (Original) A system in accordance with Claim 18 wherein to alter the position of said detector assembly and said source assembly, said system is configured to move at least one of said source and said detector relative to said other assembly to alter a distance between said source and said detector.

22. (Original) A system in accordance with Claim 18 wherein said source and said detector are aligned along a plane of interest, and wherein to alter the position of said detector assembly and said source assembly, said system is configured to move at least one of said source and said detector relative to said other assembly to alter the plane of interest.

23. (Original) A system in accordance with Claim 22 wherein to move at least one of said source and said detector relative to said other assembly, said system is configured to translate at least one of said source and said detector parallel to the plane of interest.

24. (Original) A system in accordance with Claim 18 further comprising a table for supporting the object, and wherein to alter the position of said detector assembly and said source assembly, said system is configured to move said detector and said source relative to said table.

25. (Original) A system in accordance with Claim 24 wherein to move said detector assembly and said source assembly relative to said table, said system is configured to rotate said detector assembly and said source assembly about said table.

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Currently amended) A system in accordance with ~~Claim 28~~ Claim 18 wherein to collect image data, said system is configured to detect x-ray signals utilizing a portion of at least one said detector panel and to ~~wherein to detect x-ray signals utilizing a portion of at least one of said detector panel, said system is configured to alter a position of at least one of said detector panel.~~

30. (Canceled)

31. (Canceled)

32. (Canceled)

33. (Canceled)

34. (Original) A system in accordance with Claim 18 wherein said positioning means comprises an arm having a first end portion and a second end portion, wherein said x-ray source assembly coupled to said arm first end portion, and wherein said detector assembly coupled to said arm second end portion.

35. (Original) A system in accordance with Claim 18 wherein said positioning means comprises a gantry rotatably coupled to said base.

36. (Canceled)

37. (Currently Amended) A method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation, said method comprising the steps of:

generating an image of the object in a first mode of operation;

generating an image of the object in a second mode of operation; and

configuring the multimode imaging system to combine at least one image from the first mode of operation with at least one image from the second mode of operation to thereby improve ~~image quality.~~ image quality;

wherein at least one said mode of operation is an x-ray fluoro mode wherein separate images of the object are generated using respective detector panels that are angled with respect to one another and wherein the multimode imaging system is configured to determine a location of desired elements in the separate images.

38 (Previously Presented) A method in accordance with Claim 37 wherein the plurality of modes of operation comprise a plurality of modes selected from the group consisting of computed tomographic modes, X- ray fluoro mode, and tomosynthesis mode.

39. (Currently Amended) A method in accordance with Claim 37 wherein at least one of the modes of operation includes an x-ray fluoro mode and another includes a 3-D image mode, wherein the first mode of operation is and further comprising operating the imaging system in the 3-D image mode to locate a desired element and the second mode of operation is the then operating the imaging system in the x-ray fluoro mode fluoro mode, and the second mode of operation is used to predict or determine the trajectory of a medical instrument with respect to the desired element. element location.

40. (Canceled)

41. (Currently Amended) A method of generating an image of an object using a multimode imaging system configured to operate in a plurality of modes of operation, said method comprising operating the imaging system in a 3-D image mode to generate a 3-D image to locate a desired element and then operating the imaging system in an x-ray fluoro mode to predict or determine the trajectory of a medical instrument with respect to the desired element. generate a plurality of images taken at different angles relative to the object, and using the generated plurality of images to locate a desired element in three dimensions in the 3-D image.

42. (New) A method in accordance with Claim 41 wherein said generating a plurality of images in said x-ray fluoro mode comprises translating an x-ray source of the imaging system along a z-axis of the object to locate the desired element within the object and determining depth information from multiple x-ray fluoro images taken at different angles.

43. (New) A method in accordance with Claim 41 wherein said generating a plurality of images in said x-ray fluoro mode comprises angularly translating an x-ray source of the imaging system relative to the object.

44. (New) A method in accordance with Claim 41 wherein said generating a plurality of images in said x-ray fluoro mode comprises utilizing angled detector panels to generate separate x-ray fluoro images, determining a location of the desired element within the separate x-ray fluoro images, and utilizing triangulation from the determined location of the desired element within the separate x-ray images to determine a location of the desired elements in the 3-D image.

45. (New) A method in accordance with Claim 44 wherein the angled detector panels are oriented perpendicularly or at an acute angle to one another.